



U.S. Department
of Transportation
**Federal Aviation
Administration**

Advisory Circular

Subject: USE OF AIRPLANE FLIGHT
TRAINING DEVICES (Inflight
Training and Checking for Airman
Qualification and Certification)

Date: 10/11/94
Initiated by: AFS-210

AC No: 120-46A
Change:

1. PURPOSE. This advisory circular (AC) provides an acceptable means, but not the only means, of ensuring compliance with the standardized use of airplane flight training devices (FTD) in pilot, instructor, and evaluator flight training, testing, and experience requirements. These training, testing, and experience activities are conducted for the purposes of pilot and instructor certification under Part 61 of the Federal Aviation Regulations (FAR), or for pilot, instructor, and evaluator qualification under the operating rules of the FAR. The technical performance and criteria for each of the seven FTD qualification levels are contained in AC 120-45, as amended, Airplane Flight Training Device Qualification. As a companion to AC 120-45 (and 120-40 when visual systems are installed), as amended, and in conjunction with training and checking required by applicable FARs, this AC provides the tasks creditable for training, checking, and flight experience in FTD qualification levels two, three, four, five, six, and seven.

2. CANCELLATION. AC 120-46, USE OF ADVANCED TRAINING DEVICES (Airplanes Only), dated June 12, 1987, is canceled. Persons having FTD acquisition projects in progress on the effective date of this AC, and who desire to apply for training credits of this AC, have 90 days from the effective date to notify AFS-200/800 of those projects.

3. RELATED FAR SECTIONS.

- a. Part 1 - Definitions and Abbreviations. Sections 1.1-3.
- b. Part 61, Subpart A - General. Sections 61.55-58.
- c. Part 61, Subpart B - Aircraft Ratings and Special Certificates. Sections 61.63-67.
- d. Part 61, Subpart D - Private Pilots. Section 61.109.
- e. Part 61, Subpart E - Commercial Pilots. Section 61.129.
- f. Part 61, Subpart F - Airline Transport Pilots. Sections 61.155-157.

g. Part 61, Appendix A - Practical Test Requirements for Airplane Airline Transport Pilot Certificates and Associated Class and Type Ratings.

h. Part 63 - Certification: Flight Crewmembers Other Than Pilots.

i. Part 121, Subpart N - Training Program.

j. Part 121, Subpart O - Crewmember Qualifications.

k. Part 121, Appendix E - Flight Training Requirements.

l. Part 121, Appendix F - Proficiency Check Requirements.

m. Part 121, Appendix H - Advanced Simulation Plan.

n. Special Federal Aviation Regulation No. 58. Advanced Qualification Program.

o. Part 125, Subpart I - Flight Crewmember Requirements. Sections 125.285-287, 125.291, and 125.297.

p. Part 135, Subpart G - Crewmember Testing Requirements. Sections 135.261-271.

q. Part 135, Subpart H - Training. Sections 135.321-353.

r. Part 141, - Pilot Schools.

4. RELATED READING MATERIAL.

a. Appropriate sections of AC 120-35, as amended, Line Operational Simulations: Line-Oriented Flight Training, Special Purpose Operational Training, Line Operational Evaluation.

b. AC 120-45, as amended, Airplane Flight Training Device Qualification.

c. AC 120-51, as amended, Crew Resource Management.

d. AC 120-54, as amended, Advanced Qualification Program.

e. Appropriate sections of FAA Order 8400.10, Air Transportation Operations Inspectors's Handbook.

f. Appropriate sections of FAA Order 8700.1, Aviation Safety Inspector's Handbook.

g. Appropriate FAA Airplane Practical Test Standards (8081-1A, 8081-2, 8081-3, 8081-4A, 8081-5, and 8081-9A).

5. BACKGROUND.

a. For almost four decades, the FAA has been expanding the provisions in its regulations and advisory material for the use of flight simulation in airman training, checking, and for specific pilot flight experience credit. Until recently, these provisions have been applied almost exclusively to advanced simulators that employ sophisticated motion, visual, control loading, and aerodynamic programming.

b. The FAA has published guidance regarding the technical and operational aspects of flight simulation device qualification levels (AC 120-40, as amended, Airplane Simulator Qualification, and AC 120-45, as amended, Airplane Flight Training Device Qualifications). Guidance for using flight simulators is contained in other documents. Guidance for using flight training devices is provided in this AC.

6. DEFINITIONS.

a. Approval by the FAA permits an FTD to be used for training, checking, and experience based on an FTDs assigned qualification level and the specific training program if required.

b. Flight Experience is a pilot's previous flight activity that may include instruction, evaluation, as well as operational activities. This experience may be expressed as hours accrued in specific duty areas or as specific tasks/events accomplished by date. This experience may be used to meet one or more of the following:

- (1) Training program flight time entry requirements;
- (2) Training program flight hour requirements; or
- (3) Recency of experience requirements.

c. Flight Task (or Event) is a definitive segment of a flight area of operation (or phase) characterized by having a defined beginning and end. Each task or event may contain one or more maneuvers and/or procedures.

d. Flight Testing and Flight Checking as used in this AC are synonymous: assessment of a pilot's skill, knowledge and/or attitude as applied to flight maneuvers or flight procedures measured against an established standard.

e. Flight Training is pilot instruction at a specific duty station in flight maneuvers and procedures pertinent to a particular aircraft or set of aircraft. Flight training is comprised of demonstrations, practice or rehearsal, and evaluation.

f. National Simulator Program Manager (NSPM) is the FAA manager responsible for directing the National Simulator Program and staff. The NSPM is responsible for the qualification standards for FTDs and simulators.

g. Qualification of the FTD is issued by the Administrator at a specified level. The level is determined by evaluating the device against criteria established in AC 120-45, as amended, for one or more of the seven different FTD qualification levels.

7. DISCUSSION.

a. Each airplane FTD must be evaluated and qualified in accordance with AC 120-45, as amended. AC 120-40, as amended, will be used for evaluation and qualification of visual systems installed on FTDs. The evaluation report with the established qualification level (to include visual system as appropriate) is provided to the FAA representative having oversight responsibility for the training programs or certification activities in which the FTD is to be used. The FTD is then approved by the FAA representative for specific uses. Two conditions must be sustained to retain approval:

(1) When the FTD is used in an FAA approved training program, the required level of student performance must be supported; and

(2) The FTD must continue to meet qualification standards through continuing evaluation as outlined in AC 120-45, as amended.

b. Tasks that can be trained and checked in each FTD qualification level are prescribed in the charts provided in Appendices B and C of this AC. Appendix B contains tasks that relate to airman initial qualification or certification; Appendix C contains tasks that relate to recurring or continuing qualification of pilots.

8. TRAINING, CHECKING, AND EXPERIENCE AUTHORIZATIONS.

a. When accomplished in accordance with an approved training program required by specific operating or certification rule, the tasks listed in Appendix B and C may be approved in the specific FTD qualification level as shown for airman training and checking for specific airman certification, and qualification required by regulation.

b. Flight experience and some FAR Part 61 airman certification checking may be credited without related training program requirements.

A handwritten signature in cursive script, reading "William J. White".

William J. White
Deputy Director, Flight Standards Service

APPENDIX A

OLD VS. NEW TRAINING DEVICE AND SIMULATOR QUALIFICATION LEVEL TERMINOLOGY

OLD	=	NEW
-----	---	-----

INFLIGHT = AIRCRAFT

PHASE III SIMULATOR = LEVEL D SIMULATOR

PHASE II SIMULATOR = LEVEL C SIMULATOR

PHASE I SIMULATOR = LEVEL B SIMULATOR

VISUAL SIMULATOR = LEVEL A SIMULATOR

NON VISUAL SIMULATOR = -

(ADVANCED) TRAINING DEVICE = -

- = LEVEL 7 FLIGHT TRAINING DEVICE

- = LEVEL 6 FLIGHT TRAINING DEVICE

- = LEVEL 5 FLIGHT TRAINING DEVICE

- = LEVEL 4 FLIGHT TRAINING DEVICE

- = LEVEL 3 FLIGHT TRAINING DEVICE

- = LEVEL 2 FLIGHT TRAINING DEVICE

- = LEVEL 1 FLIGHT TRAINING DEVICE (Reserved)

10/11/94

AC 120-46A
Appendix A

APPENDIX B

CERTIFICATION & QUALIFICATION EVENTS AIRPLANES/INITIAL QUALIFICATION

The charts in this appendix indicate the qualification level/s of airplane flight training device/s which may be approved for training, checking and experience by specific Flight Area of Operation Task UNLESS OTHERWISE PROHIBITED BY REGULATION.

CODES:

A....Creditable if appropriate systems are installed and operating.

X....Creditable.

XC...Approach must be in a fully Coupled mode to be creditable.

TC...Approach must be in a fully Coupled mode to be creditable (Trainning only)

XV...Creditable only for a device which has a Visual system which has been evaluated and qualified by the NSPM in accordance with the visual system standards set out in AC 120-40, as amended, for a level A simulator or higher, and approved for a specific task.

APPENDIX B (Cont'd)

CERTIFICATION & QUALIFICATION TASKS AIRPLANES/INITIAL QUALIFICATION

AREA OF OPERATION	TASK	TRAINING DEVICE QUALIFICATION LEVEL						
		1	2	3	4	5	6	7
PREPARATION	Pre Taxi Procedures-Interior		A	X	A	A	X	X
	Interior Insp. (cockpit)		A	X	A	A	X	X
	Performance Limitations		A	X	A	A	X	X
SURFACE OPERATION	Engine Start		A	X	A	A	X	X
	Pre Takeoff Checks		A	X	A	A	X	X
	Post Landing Checks		A	X	A	A	X	X
	Shutdown		A	X	A	A	X	X
TAKEOFF	Rejected			XV			XV	XV
CLIMB	Normal\Profile(s)			X			X	X
	Area Departure			X	ATC	ATC	X	X
INFLIGHT MANEUVERS	Steep/Performance turns #							X
	Slow speed handling char. #							X
	Approach to stalls (synthetic warning)			X				X
	Specific Flight Characteristics #							X

If onset motion is not required for adequate pilot recognition as determined by FSB.

APPENDIX B (Cont'd)

CERTIFICATION & QUALIFICATION TASKS AIRPLANES/INITIAL QUALIFICATION

AREA OF OPERATION	TASK	TRAINING DEVICE QUALIFICATION LEVEL						
		1	2	3	4	5	6	7
INFLIGHT MANEUVERS (continued)	High altitude handling char.#							X
	Flight control system failures							X
	Holding			X	TC	TC	X	X
DESCENT	Normal			X			X	X
	Maximum Rate			X			X	X
APPROACHES	Holding			X	TC	TC	X	X
	Non Precision Normal*		A	X	A	A	X	X
	Precision PAR Normal			X			X	X
	Precision ILS/MLS Normal		XC	X	TC	XC	X	X
	Precision Steep ILS/MLS			X			X	X
MISSED APPROACH	Normal			X			X	X
EMERGENCY/ ABNORMAL PROC.	Engine Failure/Fire in flt. Shutdown/Restart		X	X		X	-----	X
	Non Std. Flap Approach#							X

* Device must be approved for specific type/s of Non Precision Approach/s depending upon equipment installation and operation; i.e. NDB, VOR, Loc Only, Loc Back Course, SDF/LDA, TACAN, RNAV, LORAN C, GPS.

If onset motion is not required for adequate pilot recognition as determined by FSB.

APPENDIX B (Cont'd)

CERTIFICATION & QUALIFICATION TASKS AIRPLANES/INITIAL QUALIFICATION

AREA OF OPERATION	TASK	TRAINING DEVICE QUALIFICATION LEVEL						
		1	2	3	4	5	6	7
EMERGENCY/ ABNORMAL PROC. (Continued) =====	Emergency Decompression		A	X		A	X	X
	Emergency Evacuation						X	X
	Degraded Inst. Approach							X
	=====	=====						
	Line Operational Flight Tng.						*XV	*XV
	Spec. Purpose Oper. Training			*X			*X	*X
	Air Hazard Avoidance						*XV	*XV
	Airframe Ice Accumulation							X
	Crew Coordination-Comm.						X	X
	Systems							
ALL	- Normal/Alternate -		A	X	A	A	X	X
	- Abnormal/Emergency -		A	X	A	A	X	X
	IFR, VFR, DAY, NIGHT time and tasks for recency of experience	Creditable for the time to accomplish specific flight tasks for which the qualification level is approved and a visual system (if required) is installed and qualified to support.						

* Approved for specific flight scenarios.

APPENDIX C

CERTIFICATION & QUALIFICATION TASKS AIRPLANES/RECURRING-CONTINUING QUALIFICATION

The charts in this appendix indicate the qualification level/s of airplane flight training device/s which may be approved for specific Flight Area of Operation Task UNLESS OTHERWISE PROHIBITED BY REGULATION.

CODES:

A....Creditable if appropriate systems are installed and operating.

X....Creditable.

XC...Approach must be in a fully Coupled mode to be creditable.

TC...Approach must be in a fully Coupled mode to be creditable (Trainning only)

XV...Creditable only for a device which has an operable Visual system which has been evaluated and qualified by the NSPM in accordance with the visual system standards set out in AC 120-40, as amended, for a Level A simulator or higher, and approved for the specific task.

10/11/94

AC 120-46A
Appendix C

APPENDIX C (Cont'd) CERTIFICATION & QUALIFICATION TASKS AIRPLANES/RECURRING-CONTINUING QUALIFICATION

AREA OF OPERATION	TASK	TRAINING DEVICE QUALIFICATION LEVEL						
		1	2	3	4	5	6	7
PREPARATION	Pre Taxi Procedures-Interior		A	X	A	A	X	X
	Interior Insp. (cockpit)		A	X	A	A	X	X
	Preflight (interior)		A	X	A	A	X	X
	Performance Limitations		A	X	A	A	X	X
SURFACE OPERATION	Engine Start		A	X	A	A	X	X
	Pre Takeoff Checks		A	X	A	A	X	X
	Post Landing Checks		A	X	A	A	X	X
	Shutdown		A	X	A	A	X	X
TAKEOFF	Normal							XV
	Rejected			XV			XV	XV
	Crosswind							XV
CLIMB	Normal\Profile(s)			X			X	X
	Power plant failure			X			X	X
	Area Departure			X	TC	TC	X	X
INFLIGHT MANEUVERS	Steep/Performance turns #			X			X	X
	Slow speed handling char. #			X			X	X
	Approach to stalls (synthetic warning)			X			X	X
	Specific Flight Characteristics #						X	X

If onset motion is not required for adequate pilot recognition as determined by FSB.

APPENDIX C (Cont'd) CERTIFICATION & QUALIFICATION TASKS AIRPLANES/RECURRING-CONTINUING QUALIFICATION

AREA OF OPERATION	TASK	TRAINING DEVICE QUALIFICATION LEVEL						
		1	2	3	4	5	6	7
INFLIGHT MANEUVERS (continued)	High altitude handling char.# Flight control system failures (symmetrical only) Holding			X			X	X
							X	X
			X	X	TC	X-----		X
DESCENT	Normal	X	X			X-----		X
	Maximum Rate	X	X			X-----		X
APPROACHES	Holding	X	X		TC	X-----		X
	Non Precision Normal*	A	X		A	A	X	X
	Precision PAR Normal		X				X	X
	Precision ILS/MLS Normal	XC	X		TC	XC	X	X
	Precision Steep ILS/MLS		X				X	X
MISSED APPROACH	Normal	X	X			X-----		X
EMERGENCY/ ABNORMAL PROC.	Engine Failure/Fire in flt. Shutdown/Restart	X	X			X-----		X
	Climb		X				X	X
	Non Std. Flap Approach#		X				X	X

* Device must be approved for specific type/s of Non Precision Approach/s depending upon equipment installation and operation; i.e., NDB, VOR, Loc Only, Loc Back Course, SDF/LDA, TACAN, RNAV, LORAN C, GPS.

If onset motion is not required for adequate pilot recognition as determined by FSB.

APPENDIX C (Cont'd) FLIGHT CERTIFICATION & QUALIFICATION TASKS PILOTS LAND AIRPLANES/RECURRING-CONTINUING QUALIFICATION

AC 120-46A
 Appendix C

AREA OF OPERATION	TASK	TRAINING DEVICE QUALIFICATION LEVEL						
		1	2	3	4	5	6	7
EMERGENCY/ ABNORMAL PROC. (Continued) ALL	Emergency Decompression		A	X	A	A	X	X
	Emergency Evacuation						X	X
	Hdg. Ref. out Approach			X			X	X
	Line Operational Flight Tng.						*XV	*XV
	Spec. Purpose Oper. Training			*X		*X	-----	*X
	Air Hazard Avoidance						XV	XV
	Airframe Ice Accumulation					X	-----	X
	Crew Coordination-Comm.			X		X	-----	X
	Systems							
	- Normal/Alternate -		A	X	A	A	X	X
	- Abnormal/Emergency -		A	X	A	A	X	X
	IFR, VFR, DAY, NIGHT time and tasks for recency of experience	Creditable for the time to accomplish specific flight tasks for which the qualification level is approved and a visual system (if required) is installed and qualified to support.						

* Approved for specific flight scenarios.

U.S. Department
of Transportation

**Federal Aviation
Administration**

800 Independence Ave., S.W.
Washington, D.C. 20591

**FORWARDING AND RETURN
POSTAGE GUARANTEED**

Official Business
Penalty for Private Use \$300

BULK MAIL
POSTAGE & FEES PAID
FEDERAL AVIATION
ADMINISTRATION
PERMIT NO. G-44